

REMARKS

Withdrawal of Appeal to Reopen Prosecution

By filing of this amendment and response to the Final Office Action dated December 28, 2008, and the attached Request for Continued Examination, Applicant respectfully requests that the present application be withdrawn from appeal and that prosecution of this application be reopened.

Claim Status

By this amendment, claims 38, 41, 63, 64, 66, 72, 73, and 77-79 are amended, claims 51, 80, and 81 are canceled, and new claims 82-92 are added. Claims 38-42, 44, 46-48, 50, 52, 59-68, 72-79, and 82-92 are pending.

Claim Rejections - 35 USC § 103

No Prima Facie Obviousness of Independent Claims that Recite H/D4

Amended independent claims 66, 78 and 79 and new independent claim 89 recite a packing with a height H and a diameter D4, such that the ratio H/D4 is 0.75 to 0.85. For example, claim 66 recites a valve element that controls flow based on a rotational position of the valve element about an axis of rotation and a packing. The packing has a cylindrical outer surface having an outer diameter D4 and a height H that is the distance the cylindrical outer surface extends along the axis of rotation of the valve element from a bottom surface of the packing to an upper surface of the packing.

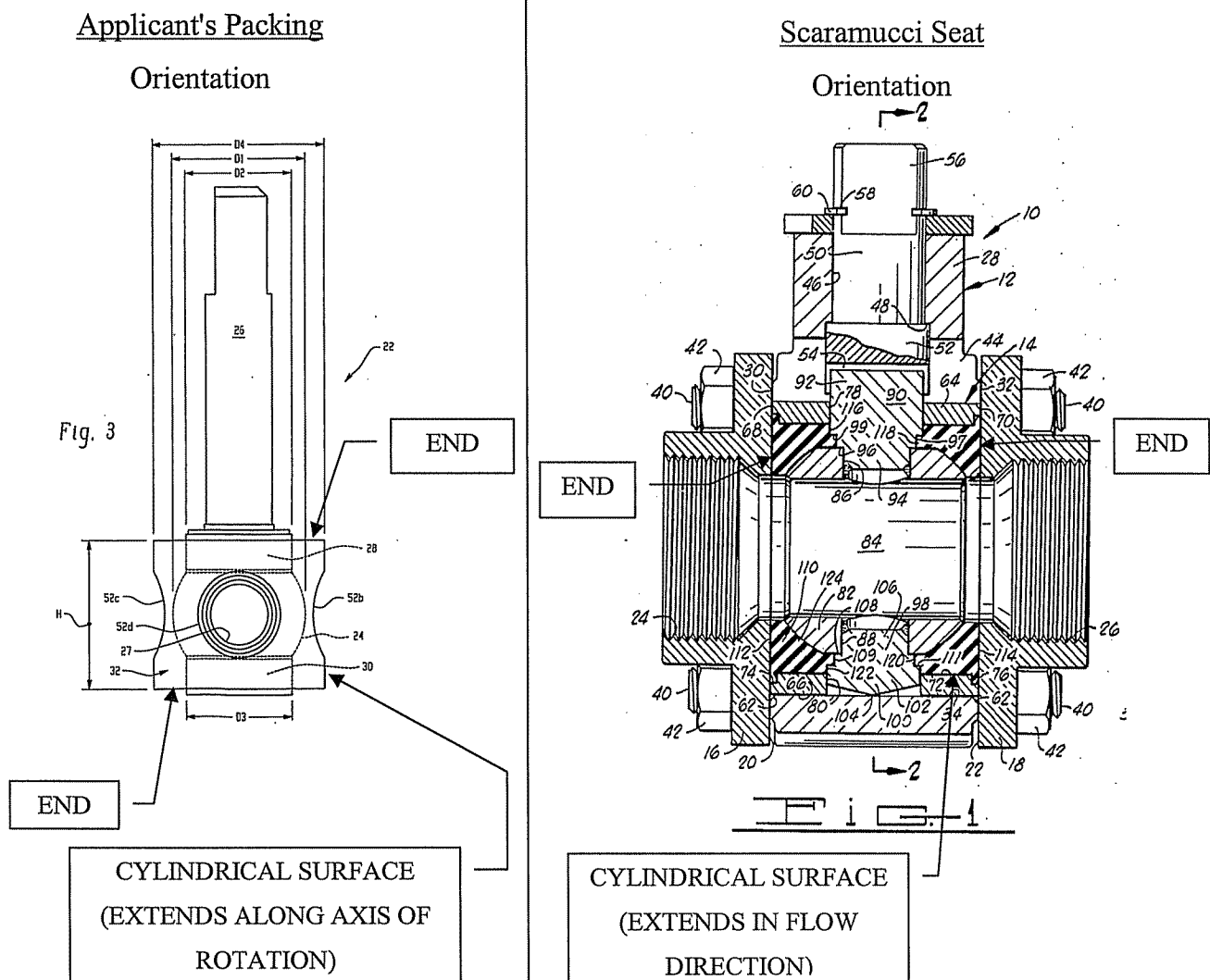
The Office Action rejected independent claims 66, 78 and 79 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,599,932 to Scaramucci (herein "Scaramucci"), Scaramucci in view of U.S. Patent No. 4,423,749 to Schmitt (herein "Schmitt"), Scaramucci in view

of U.S. Patent No. 3,066,909 to Reed, Jr. (herein "Reed Jr."), and/or Scaramucci in view of Schmitt in view of Reed, Jr.

The Office Action has not established Prima Facie obviousness of claims 66, 78, and 79 in view of Scaramucci alone or in view of Schmitt and/or Reed Jr., because the valve disclosed by Scaramucci, modified as proposed by the Office Action, would not include the recited cylindrical outer surface with a height H and a diameter D4, such that the ratio H/D4 is 0.75 to 0.85.

The Office Action points out that "Scaramucci is silent as to the ratio of H/D4 of about 0.8" Office Action Dated December 28, 2008, p.3, lines 1-2. The Office Action asserts that "[i]t would have been obvious to one having skill in the art at the time the invention was made to make the packing wider than taller H/D4 of about .8 in order to make the packing thicker to provide better sealing due to more compressible material around the point of contact of fluid flow and seal." Office Action Dated December 28, 2008, p.3, lines 2-5.

The orientation of the Scaramucci packing makes it impossible for the height and width dimensions of the Scaramucci packing to be modified to have the claimed H/D4 ratio. The seat of Scaramucci extends laterally, instead of having an upright orientation. As such, the height of the Scaramucci packing along the axis of rotation of the valve element is the diameter of the packing. Annotated Fig. 3 from Applicant's disclosure and annotated Fig. 1 of the Scaramucci patent are presented below to illustrate this point.



Referring to Fig. 3 of Applicant's disclosure, the cylindrical surface of Applicant's packing extends in the direction of the axis of rotation of the valve element 26. Referring to Fig. 1 of Scaramucci, the cylindrical surface extends in the direction of flow, not along the axis of rotation of the valve member. See also, Scaramucci Figs. 2 and 5-8. Referring to Figure 1 and column 5, lines 1-10 of Scaramucci, the valve seat 110 has ends 112, 114 that engage faces 20 and 22 of the flanges 16 and 18. The cylindrical outer surface of the valve seat 110 is bounded by the valve body 64 that extends between the face 20 and the face 22. The height H (the distance the packing extends along the axis of rotation of the valve element) of the Scaramucci valve seat 110 is the diameter of the valve seat. Even if the dimensions of the Scaramucci valve

seat 110 could be arbitrarily changed, there are no changes to the height and width of the valve seat 110 that would cause the seat to have the claimed H/D4 ratio. No matter what dimensions the Scaramucci valve seat 110 might have, the height over diameter ratio H/D4 of the seat 110 will be 1 (one), because the height and diameter of the valve seat 110 are the same dimension.

Even if it were somehow possible to modify the valve disclosed by Scaramucci to have the claimed H/D4 ratio, Prima Facie obviousness has not been established, because the Office Action has provided no explanation of how the valve disclosed by Scaramucci could be modified to have the claimed H/D4 ratio. Further, if it were possible at all to modify the valve disclosed by Scaramucci to have the H/D4 ratio, it would seem that the valve disclosed by Scaramucci would require a complete reconstruction and redesign of the elements of the valve, which would change the basic principle under which the Scaramucci valve construction was designed to operate. Nearly all of the parts of the Scaramucci valve are built around a cylindrical packing that extends in the direction of flow of the valve, instead of in the direction of rotation of the valve element. It would seem that if it were possible at all to change the packing of Scaramucci to be cylindrical and extend in the direction of rotation of the valve element, all of the parts that surround the packing would need to be redesigned, which would necessarily change the principles of operation of the valve. The Office Action provides absolutely no insight as to how the Scaramucci valve could be modified to have a cylindrical packing that extends in the direction of the axis of rotation or how the modified valve would operate.

Applicant also points out that the Office Action has articulated no reason why the packing of the valve disclosed by Scaramucci should be modified to have the claimed H/D4 ratio. The Office Action asserts that “[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to make the packing wider than taller H/D4 of about .8 in order to make the packing thicker to provide better sealing due to more compressible material around the point of contact of fluid flow and seal.” Office Action Dated December 28, 2008, p.2, lines 2-5. Applicant points out that the Office Action provides no factual basis for this assertion. The Office Action has not established that making the packing of Scaramucci thicker with more compressible material would provide better sealing. To the contrary, making the

packing of Scaramucci thicker with more compressible material could make the packing more likely to creep and leak as a result. Further, the thickness of the packing could be changed in a wide variety of different ways without making the packing have the claimed H/D4 ratio. For example, common sense would dictate that the Scaramucci packing be made larger with the same proportions to increase the thickness of the packing. Otherwise, all other components of the Scaramucci valve would need to be completely redesigned to accept the new packing, rather than simply scaling the parts. In addition, making a packing with the claimed H/D4 ratio does not necessarily mean that the packing would be thicker, since the changes to other components of the valve also contribute to the thickness of the packing. There is no apparent reason why the packing of the Scaramucci valve should be made wider and thicker and the Office Action has improperly used hindsight reconstruction to concoct an alleged "reason."

Even if the assertion that the packing should be made wider than taller in order to make the packing thicker to provide better sealing due to more compressible material around the point of contact of fluid flow and seal were accepted, it is not a reason to make a packing with the recited H/D4 ratio of 0.75 to 0.85. Rather, it is only a reason why one might make the packing of the valve disclosed by Scaramucci wider than taller. There are an infinite number of possible wider than taller packings that are not in the claimed H/D4 range. The Office Action has articulated no reason why, out of the infinite number of possible packings that are wider than taller, Scaramucci should be modified to have Applicant's recited H/D4 ratio.

Schmitt does not cure the deficiencies of Scaramucci. Schmitt also does not disclose the claimed H/D4 ratio of 0.75 to 0.85. The Office Action asserts that "Schmitt shows H/D4 in which the packing is slightly wider than it is tall with a ratio of about .8." Office Action Dated December 28, 2008, item 5, lines 3-4. Applicant has thoroughly reviewed the Schmitt reference and points out that there is no teaching of a cylindrical packing height to outer diameter ratio H/D4 of 0.75 to 0.85. The Office Action appears to be relying on some measurement of the drawings of Schmitt and concluding that Schmitt discloses a ratio of H/D4 of about 0.8. As Applicant has pointed out in responses to previous Office Actions, the Federal Circuit has reaffirmed the well established rule stated in MPEP 2125 that it is inappropriate to rely upon

patent drawings for disclosure of proportions of claim elements where there is no indication that the patent drawings are to scale. Nystrom v. Trex Co., 76 USPQ 2d 1481, 1491-1492 (Fed. Cir. 2005). If the Office Action is not relying on the drawings, Applicant requests that a specific identification of the portion of Schmitt that discloses the H/D4 ratio of about .8.

Reed Jr. also does not cure the deficiencies of Scaramucci. Reed Jr. does not teach a cylindrical packing height to outer diameter ratio H/D4 of 0.75 to 0.85 and the Office Action does not allege that Reed Jr. teaches this feature.

Claims 66, 78, 79, and 89 are in condition for allowance for at least these reasons.

No Prima Facie Obviousness of Independent Claims that Recite D3/D1

Amended independent claims 38, 78 and new independent claim 89 recite a ball having a diameter D1 and a trunnion having a diameter D3, such that a ratio D3/D1 is 0.7 to 0.9. For example, claim 38 recites a valve element with a ball and a trunnion. The ball has a maximum outer diameter D1 and at least one of the trunnions has an outer diameter D3, wherein a ratio of D3/D1 is 0.7 to 0.9.

The Office Action rejected independent claims 38 and 78 under 35 U.S.C. 103(a) as being unpatentable over Scaramucci, Scaramucci in view of U.S. Patent No. 3,599,932 to Moen (herein "Moen"), Scaramucci in view of Reed, Jr., and/or Scaramucci in view of Schmitt in view of Reed, Jr.

The Office Action has not established Prima Facie obviousness of claims 38 and 78 in view of Scaramucci alone or in view of Moen, Reed Jr. and/or Schmitt, because the Office Action has not identified any reason why the valve element of Scaramucci should be modified to have the 0.7 to 0.9 D3/D1 ratio. The Office Action acknowledges that "Scaramucci is silent as to the ratio D3/D1 of about .8." Office Action Dated December 28, 2008, p.2, item 3, lines 9-10.

The Office Action asserts that “[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to make the trunnion almost as wide as the ball D3/D1 of about .8 in order to make machining easier as less material would need to be removed from the ball part of the valve to the trunnion.” Office Action Dated December 28, 2008, item 3, lines 10- 13. Applicant points out that the Office Action provides no factual basis this assertion. This assertion is inconsistent with the position the Office Action has taken with respect to the H/D4 claim element. As is explained above, the Office Action asserted that the packing of Scaramucci should allegedly be made thicker with more compressible material. Making the trunnion wider, almost as wide as the ball, would significantly reduce the thickness of the packing in the area surrounding the trunnion. Further, arbitrarily changing the D3/D1 ratio of the Scaramucci valve element would require many other components of the Scaramucci valve to be changed or the Scaramucci valve might no longer work as described. For example, the packing of Scaramucci is molded around the valve element while the valve element is disposed in the valve housing. Making the trunnions of Scaramucci wider would reduce the space between the valve element and the valve housing more difficult, if at all feasible. There is no apparent reason why the trunnion should be made almost as wide as the ball of the Scaramucci valve and the Office Action has improperly used hind sight reconstruction to invent an alleged “reason.”

Even the assertion that the trunnion should be made almost as wide as the ball were to remove less material from the ball to form the trunnion to make machining easier were accepted, it is not a reason to make a valve element with the recited D3/D1 of 0.7 to 0.9. Rather, it is only a reason why one might make the trunnion of the valve disclosed by Scaramucci wider. There are an infinite number of wider trunnion sizes that would not make the trunnion diameter to ball diameter ratio meet the D3/D1 of 0.7 to 0.9 claim element. If the trunnion of the Scaramucci valve were made only somewhat larger, the D3/D1 ratio would still be less than 0.7. If the trunnion were made almost as wide as the ball, the ratio of D3/D1 might be greater than 0.9. The Office Action has articulated no reason why, out of the infinite number of possible wider trunnions, Scaramucci should be modified to have Applicant’s D3/D1 ratio range.

Moen does not cure the deficiencies of Scaramucci. The Office Action asserts that “Moen shows D3/D1 in which the ball is slightly larger than the trunnion with a ratio of about .8.” Office Action Dated December 28, 2008, item 4, lines 3-4. Applicant has thoroughly reviewed the Moen reference and points out that there is no teaching of a ball to trunnion ratio D3/D1 of 0.7 to 0.9. The Office Action appears to be relying on some measurement of the drawings of Moen and concluding that Moen discloses a ratio of D3/D1 of about 0.8. As is pointed out above, it is a well established rule that it is inappropriate to rely upon patent drawings for disclosure of proportions of claim elements where there is no indication that the patent drawings are to scale. Further, the Office Action does not assert that Moen provides any reason to modify the Scaramucci valve element to have the claimed D3/D1 ratio of 0.7 to 0.9. If the Office Action is not relying on the drawings, Applicant requests that a specific identification of the portion of Moen that discloses the “a ratio D3/D1 of about 0.8.”

Reed Jr. and Schmitt also do not cure the deficiencies of Scaramucci. Reed Jr. and Schmitt do not teach a ball to trunnion ratio D3/D1 of 0.7 to 0.9 and the Office Action does not allege that Reed Jr. or Schmitt teach this feature.

Claims 38, 78, and 89 are in condition for allowance for at least these reasons.

No Prima Facie Obviousness of Independent Claims that Recite a Valve Element That Is Allowed To Shift In Two Opposite Directions

Amended independent claims 63 and 64 recites that a bottom end of a lower trunnion is spaced apart along the axis of rotation of the valve element from a counterbore to allow the valve element to shift in two opposite directions along the axis of rotation of the valve element.

The Office Action rejected independent claims 63 and 64 under 35 U.S.C. 103(a) as being unpatentable over Scaramucci in view of Reed, Jr. The Office Action asserts that Reed, Jr. discloses a lower trunnion spaced apart from a reduced diameter counterbore. Applicant

respectfully disagrees. Reed, Jr. discloses a plug valve. The valve element does not include any trunnion and, therefore, does not disclose a trunnion spaced apart from a counterbore.

The Office Action asserts that it would be obvious to modify Scaramucci such that the lower trunnion is spaced apart from the counterbore in order to keep the valve from breaking if a large force happened to be provided in the downward direction. Applicant respectfully points out that the Office Action has provided absolutely no support for this contention and submits that the modification proposed by the Office Action would make the valve more likely to break, not less likely. The Scaramucci patent discloses that the metal¹ element 98 is in contact with the metal housing 28. As a result, when a large force is provided in the downward direction, the large force is supported by the metal element 98 acting against the metal housing 28. If the metal element 98 were moved away from the metal 28 housing as the Office Action suggests, the hypothetical large force would be carried by the elastomeric seat, which also must perform its sealing function. Applicant respectfully submits that the Office Action has not established that it is known in the art that the valve of Scaramucci would somehow be stronger (and not more likely to leak) if the support by the metal components is removed and valve element is instead supported by the elastomeric seat.

The Office Action has not established Prima Facie obviousness of claims 63 and 64.

No Prima Facie Obviousness of Independent Claims that Recite Load Members that Apply a Load to the Packing in a Direction of the Axis of Rotation While Permitting the Valve Element to Shift in Two Opposite Directions along the Axis of Rotation

The Office Action rejected independent claim 65 under 35 U.S.C. 103(a) as being unpatentable over Scaramucci in view of U.S. Patent No. 4,911,408 to Kemp.

¹ As indicated by at least the section lines in Scaramucci.

The Office Action has not established Prima Facie obviousness of claim 65 in view of Scaramucci in view of Kemp, because claim 65 recites features that are not disclosed by the combined teachings of Scaramucci and Kemp. For example, claim 65 features load members that apply a load to a packing that seals against a valve element within a valve cavity in a direction of an axis of rotation of the valve element over a range of temperatures while permitting the valve element to axially shift in two opposite directions along a axis of rotation of the valve element to compensate for temperature effects on said packing.

As is explained above, the valve seat 110 of Scaramucci is cylindrical and extends in the direction of flow, not along the axis of rotation of the valve member. The Office Action has provided no explanation of how the Scaramucci valve could be modified to include load members that apply load in the direction of the axis of rotation of the valve element. While it is not clear that there is any possible way that Scaramucci could be modified to have such load members, it seems that live loading of the Scaramucci valve seat 110 in a direction of an axis of rotation of the valve element would require a complete redesign of the valve seat and most, if not all, other components of the valve. The Office Action has not established that it would be obvious to one having skill in the art to modify Scaramucci to have the valve seat 110 be live loaded in the direction of the axis of rotation.

Even if the valve disclosed by Scaramucci could somehow be modified to live load the packing in the direction of the axis of rotation of the valve member, the Office Action provides no indication that live loading of the packing of the Scaramucci valve would permit the valve element to shift axially along the axis of rotation of the valve element. To the contrary, the Office Action states that the reason one having ordinary skill in the art would live load the packing of the Scaramucci valve is “to keep everything tight.” Office Action, item 11, lines 4-6. Applicant points out that the lower trunnion 98 of the valve disclosed by Scaramucci is in engagement with the valve housing 28. Scaramucci, col. 3, lines 50-57 and Figure 1. Applying a live load to the packing of Scaramucci to “keep everything tight” would maintain the lower trunnion 98 in engagement with the valve housing 28 and thereby prevent the valve element from shifting along the axis of rotation

of the valve element. As such, the Scaramucci valve, modified in view of Kemp, as proposed by the Office Action would not meet claim 65.

The Office Action has not established Prima Facie obviousness of claim 65 in view of Scaramucci and Kemp.

Dependent Claims

New dependent claims 84, 88, and 90 depend from independent claims 79, 66, and 89 respectively and further recite that the D3/D1 ratio of 0.7 to 0.9 and the H/D4 ratio of 0.75 to 0.85 allow the packing made from the material selected from the group consisting of polytetrafluoroethylene (PTFE), polyethylene, polyetheretherketone (PEEK) and fluorinated ethylene propylene to be snap fit onto the valve element. None of the applied references disclose both a valve member having the D3/D1 ratio of 0.7 to 0.9 and a packing having the H/D4 ratio of 0.75 to 0.85 or provide any suggestion that the valve element and packing should be dimensioned such that a packing made from polytetrafluoroethylene (PTFE), polyethylene, polyetheretherketone (PEEK) or fluorinated ethylene propylene can be snap fit onto the valve element. In the prior art references, the packings are molded around the valve element, heated and compressed onto the valve element, and/or made from a material, such as rubber, that is much more elastic than polytetrafluoroethylene (PTFE), polyethylene, polyetheretherketone (PEEK) or fluorinated ethylene propylene. The D3/D1 ratio of 0.7 to 0.9 and the H/D4 ratio of 0.75 to 0.85 also reduce the amount of packing material, which makes it less likely that the polytetrafluoroethylene (PTFE), polyethylene, polyetheretherketone (PEEK) or fluorinated ethylene propylene material will creep. Claims 84, 88, and 90 are in condition for allowance.

New dependent claims 85, 89, and 91 are similar to claims 84, 88, and 90 and further recite that the D3/D1 and H/D4 ratios allow the packing to be snap fit onto the valve element while the packing is at a temperature between 65-100° F. Claims 85, 89, and 91 are in condition for allowance.

Claims 39-42, 44, 46-48, 50, 52, and 59-62 depend from claim 38 and are allowable for at least the reasons claim 38 is allowable.

Claims 67, 68, 72-77, 86, 87, and 92 depend from claim 66 and are allowable for at least the reasons claim 66 is allowable.

Claims 82 and 83 depend from claim 79 and are allowable for at least the reasons claim 79 is allowable.

Should the Commissioner decide that any fee or fee deficiency is due, the Commissioner is hereby authorized to charge any and all such other fees incurred as a result of entering this amendment to deposit account number 03-0172, order number 22188/06985.

Respectfully submitted,



Date: Oct. 10, 2008

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